Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of simulating advection of a plurality of elements through space, the method comprising:

generating a plurality of 2D grids with a computer, each 2D grid being independent and having a plurality of grid points;

associating movement information with each 2D grid point;

changing the movement information associated with the 2D grid points by associating a z-component with each 2D grid point to form a respective 3D vector over a time period that includes discrete intervals;

defining a region of 3D space using the 2D grids;

advecting the plurality of elements through the region of 3D space using the movement information associated with the 2D grids, wherein using the movement information includes adding a pseudo-random 3D vector to each respective 3D vector; and

displaying the simulated advection of the plurality of elements.

2. (Currently Amended) A method of simulating elements advecting through space, the method comprising:

generating a plurality of 2D grids with a computer, each 2D grid being independent and having a plurality of grid points, each grid point having movement information;

defining a region of 3D space using the 2D grids by associating a z-component with each 2D grid point (to form a respective 3D vector;

generating a plurality of elements in the region of 3D space, each element having a location;

for each element, determining movement information for an element based on the location of the element in the region of 3D space, wherein the determination includes:

identifying points on the 2D grids that lie on both sides of the element at the location in the region of 3D space;

determining movement information at the points on the 2D grids; and

interpolating between the movement information at the points on the 2D grids to determine element movement information for the element at the location in 3D space;

adding a pseudo-random 3D vector to each element in 3D space to simulate advecting of the element; and

displaying the advecting of the simulated elements.

3. (Original) The method of claim 2 wherein the movement information includes a 2D vector.

4. (Currently Amended) An apparatus for simulating advection of a plurality of elements through space, the apparatus comprising:

a computer to generate a plurality of 2D grids, each 2D grid being independent and having a plurality of grid points, each 2D grid point is associated with movement information, wherein the movement information associated with the 2D grid points of the 2D grids changes over a time period that includes discrete intervals,

the computer also defines a region of 3D space using the 2D grids by associating a z-component with each 2D grid point to form a respective 3D vector, advects the plurality of elements through the region of 3D space using the movement information associated with the 2D grids, wherein using the movement information includes adding a pseudo-random 3D vector to each respective 3D vector, and displays the simulated advection of the plurality of elements.